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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/815,453	<b>Applicant(s)</b> GONZALEZ ET AL.	
	<b>Examiner</b> MARSHALL MCLEOD	<b>Art Unit</b> 2457	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 and 81-89 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26, and 81-89 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. Claims 1-26, and 81-89 are pending in this application.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1-6, 8-10, 12-19, 21-23, 25-26, and 81-89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isfeld et al. (Patent No US 5,828,835), hereinafter Isfeld, in view of Hagsand et al. (Patent No US 7,254,142 B2), hereinafter Hagsand and further in view of Chuprun et al. (Patent No US 6,115,580), hereinafter Chuprun.**

4. With respect to claim 1, Isfeld discloses accepting the channel in the destination processing node (Column 3, lines 1-4); allocating a transmit buffer for the channel in the source processing node (Column 4, lines 29-35; i.e. messages to be transmitted on the connectionless communication link can be interpreted as allocating a transmit buffer for the channel); allocating a receive buffer for the channel in the destination processing node (Column 4, lines 11-17); writing data from a source processing element to the transmit buffer (Column 3, lines 40-48); transmitting the data from the transmit buffer over the channel using a source network interface in the source processing node (Column 2, lines 40-45); receiving the data over the channel into

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the receive buffer using a destination network interface in the destination processing node (Column 4, lines 11-17); reading in the data from the receive buffer into the destination processing element (Column 4, lines 11-17).

Isfeld does not disclose a method of communicating data between a plurality of processing nodes, the method comprising: determining a route for a unidirectional channel from a source processing node to a destination processing node within the array of processor nodes, the determined route based on a physical description of the array of processor nodes; generating the unidirectional channel along the determined route from the source processing node to the destination processing node, the channel having a bandwidth requirement.

However, Hagsand discloses the channel that has bandwidth requirement (Column 3, lines 42-43).

It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the teachings of Isfeld with the teachings of Hagsand in order to speed up or reduce the transfer of data by specifying that the system bandwidth meet certain requirements.

The combination of Isfeld and Hagsand does not disclose a method of communicating data between a plurality of processing nodes, the method comprising: determining a route for a unidirectional channel from a source processing node to a destination processing node within the array of processor nodes, the determined route based on a physical description of the array of

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processor nodes; generating the unidirectional channel along the determined route from the source processing node to the destination processing node.

However, Chuprun discloses a method of communicating data between a plurality of processing nodes (Column 1, lines 13-15), the method comprising: determining a route for a unidirectional channel from a source processing node to a destination processing node within the array of processor nodes, the determined route based on a physical description of the array of processor nodes (Column 2, lines 1-23); generating the unidirectional channel along the determined route from the source processing node to the destination processing node (Column 5, lines 63-67 and continued through to Column 6, lines 1-12).

It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the combined teachings of Isfeld and Hagsand with the teachings of Chuprun, in order to improving connectivity and throughput in a wireless communications network (Chuprun; Column 2, lines 24-26).

5. With respect to claim 14, Isfeld discloses a source processing node (Column 37, Claim 1), allocate a transmit buffer for the unidirectional channel, and write data to the transmit buffer for the unidirectional channel (Column 12, lines 26-48), and a source network interface (Column 12, lines 11-18), configured to transmit the data from the transmit buffer of the source processing node over the unidirectional channel (Column 2, lines 40-45); and a destination processing node (Column 4, lines 11-17), a destination processing element configured to accept the unidirectional

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channel, allocate a receive buffer for the channel in the destination processing node, and receive the data from the receive buffer (Column 4, lines 11-17), a destination network interface (Column 8, lines 50-52) configured to receive the data into the receive buffer for the unidirectional channel (Column 4, lines 11-17).

Isfeld does not disclose the unidirectional channel having a bandwidth requirement and generated by the source processing element along a route, the route and the bandwidth requirement based on one or more tasks associated with the destination processing node, and the source processing node and destination processing node included within an array of processing nodes.

However, Hagsand discloses a channel that has bandwidth requirement (Column 3, lines 42-43).

It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the teachings of Isfeld with the teachings of Hagsand in order to speed up or reduce the transfer of data by specifying that the system bandwidth meet certain requirements.

The combination of Isfeld and Hagsand does not disclose generated by the source processing element along a route, the route and the bandwidth requirement based on one or more tasks associated with the destination processing node, and the source processing node and destination processing node included within an array of processing nodes.

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However, Chuprun discloses generated by the source processing element along a route, the route and the bandwidth requirement based on one or more tasks associated with the destination processing node, and the source processing node and destination processing node included within an array of processing nodes (Column 2, lines 1-23).

It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the combined teachings of Isfeld and Hagsand with the teachings of Chuprun, in order to improving connectivity and throughput in a wireless communications network (Chuprun; Column 2, lines 24-26).

6. With respect to claims 2 and 15, Isfeld discloses wherein the unidirectional channel is associated with a first task executing on the source processing element and a second task executing on the destination processing element (Column 12, lines 49-57).

7. With respect to claims 3 and 16, Isfeld discloses wherein the unidirectional channel is associated with a first port in the source processing element and a second port in the destination processing element (Column 41; Claim 41, lines 21-32).

8. With respect to claims 4 and 17, Isfeld discloses the size of buffers (Column 20, lines 12-18). Isfeld does not disclose wherein the unidirectional channel has a maximum number of buffers. However, Hagsand discloses wherein the unidirectional channel has a maximum number of buffers (Column 4, lines 17-24).

9. With respect to claims 5 and 18, Isfeld does not disclose reserving intermediate resources for the unidirectional channel based on the bandwidth requirements. However, Hagsand discloses reserving intermediate resources for the unidirectional channel based on the bandwidth requirements (Column 2, lines 63-67 and continued through to Column 3, lines 1-15).

10. With respect to claims 6 and 19, Isfeld does not disclose guaranteeing bandwidth based on the bandwidth 5 requirements using time division multiplexing. However, Hagsand discloses guaranteeing bandwidth based on the bandwidth requirements using time division multiplexing (Column 2, lines 38-44).

11. With respect to claims 8 and 21, Isfeld discloses polling a plurality of channels to check if data is received into the receive buffer for the unidirectional channel (Column 12, lines 44-50; i.e. ...hardware keeps state information which can be interpreted that the hardware checks if the channel has received data i.e. polling).

12. With respect to claims 9 and 22, Isfeld discloses freeing the transmit buffer (Column 34, lines 52-54).

13. With respect to claims 10 and 23, Isfeld discloses freeing the receive buffer (Column 38; Claim 11, line 36).



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14. With respect to claims 12 and 25, Isfeld discloses receiving a pointer for the data in the receive buffer into the destination processing element and wherein receiving the data from the receive buffer is based on the pointer (Column 12, lines 40-48).

15. With respect to claims 13 and 26, Isfeld discloses wherein a time for a receive call in the destination processing element does not depend upon a size of the data (Column 2, line 40-50).

16. With respect to claim 81, neither Isfeld nor Hagsand discloses receiving the first task in the source processing node, wherein the step of generating a channel is performed in response to receiving the first task.

However, Chuprun discloses receiving the first task in the source processing node, wherein the step of generating a channel is performed in response to receiving the first task (Column 6, lines 1-12).

17. With respect to claim 82, neither Isfeld nor Hagsand discloses determining a topology of processing nodes to process one or more tasks, the topology including the channel.

However, Chuprun discloses determining a topology of processing nodes to process one or more tasks, the topology including the channel (Column 7, lines 11-22).

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18. With respect to claim 83, Isfeld discloses receiving a response signal from the destination processing node by the source processing node (Column 9, lines 49-59).

19. With respect to claim 84, neither Isfeld nor Hagsand discloses assigning tasks to one or more nodes in the array of nodes, wherein said step of generating the unidirectional channel is performed in response to said step of assigning tasks.

However, Chuprun discloses assigning tasks to one or more nodes in the array of nodes, wherein said step of generating the unidirectional channel is performed in response to said step of assigning tasks (Column 2, lines 1-17).

20. With respect to claim 85, neither Isfeld nor Hagsand discloses wherein the route for the unidirectional channel is further based on a physical description of the multi-processor system.

However, Chuprun discloses wherein the route for the unidirectional channel is further generated based on a physical description of the multi-processor system (Column 5, lines 37-52).

21. With respect to claim 86, neither Isfeld nor Hagsand discloses wherein a compiler is configured to determine routing information for one or more channels and assign a task to one or more destination processing nodes.

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However, Chuprun discloses wherein a compiler is configured to determine routing information for one or more channels and assign a task to one or more destination processing nodes (Column 3, lines 22-41).

22. With respect to claim 87, neither Isfeld nor Hagsand discloses wherein the transmit buffer and receive buffer are allocated based on the one or more tasks and a physical description of a portion of the array of nodes over which the data is to be transmitted.

However, Chuprun discloses wherein the transmit buffer and receive buffer are allocated based on the one or more tasks and a physical description of a portion of the array of nodes over which the data is to be transmitted (Column 5, lines 37-52).

23. With respect to claim 88, neither Isfeld nor Hagsand discloses wherein determining a route for a unidirectional channel is based on an application description.

However, Chuprun discloses wherein determining a route for a unidirectional channel is based on an application description (Column 6, lines 13-21).

24. With respect to claim 89, neither Isfeld nor Hagsand discloses wherein generating the unidirectional channel along the determined route is based on an allocated communication bandwidth between a first task on the source processing node and a second task on the destination processing node.

However, Chuprun discloses wherein generating the unidirectional channel along the determined route is based on an allocated communication bandwidth between a first task on the source processing node and a second task on the destination processing node (Column 6, lines 13-26).

**25. Claims 7 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isfeld, in view of Hagsand, in view of Chuprun and further in view of Plante (Pub. No US 2004/0208602 A1).**

26. With respect to claims 7 and 20, Isfeld does not disclose guaranteeing bandwidth based on the bandwidth requirements using spatial division multiplexing. However, Plante discloses guaranteeing bandwidth based on the bandwidth requirements using spatial division multiplexing (Page 18; [0210], lines 1-8). It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the teachings of Isfeld with the teachings of Plante in order to transmit independent and separately encoded data signals using the current channel and specified bandwidth requirement put in place.

**27. Claims 11 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isfeld, in view of Hagsand, in view of Chuprun and further in view of Pitts (Patent No US 6,505,241 B2).**

With respect to claims 11 and 24, Isfeld does not disclose destroying the unidirectional channel. However, Pitts discloses destroying the unidirectional channel (Column 30, line 32).

*Response to Arguments*

28. Applicant's arguments filed 19 November 2009 have been fully considered but they are not persuasive.

29. With respect to applicant's arguments on page 17 of the instant remarks. Applicant's contend that Chuprun does not disclose "determining a route for a "unidirectional" channel from a source processing node to a destination processing node"". The examiner respectfully disagrees and refers applicant to (Column 5, lines 63-67 and continued through to Column 6, lines 1-12), which the examiner interprets as discloses determining a route for a "unidirectional" channel from a source processing node to a remote node (i.e. destination node). Next, applicant's, refer to, cites (Chuprun, Col. 2, Lines 49-50) and concludes that in Chuprun "each of the outdoor terrain nodes includes a bi-directional transceiver and is in bidirectional communication with another outdoor node". The examiner respectfully disagrees with applicant's conclusion that "...nodes includes a bi-directional transceiver and is in bidirectional communication with another outdoor node". The examiner respectfully states to applicant's that Chuprun does not disclose bi-directional transceivers and as such applicant's conclusion is improper. Next, applicant's contend that Chuprun does not disclose or suggest "a source and destination "processing node" within an array of processor nodes. The array of processor nodes is comprised of one or more processors". The examiner respectfully disagrees and states to applicant's that nowhere within applicant's claim 1 does it mention **"The array of processor nodes is comprised of one or more processors"**. As such applicant's argument is moot.

30. With respect to applicant's arguments on page 18 of the instant remarks. Applicant's contend that "Chuprun should not be combined with Isfeld and Hagsand because the references are not compatible with each other". The examiner respectfully disagrees and states to applicant's that, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, as correctly stated by applicant's "Isfeld and Hagsand relate to broadcast over connection-less wired channels". As in Isfeld and Hagsand, Chuprun also relates to broadcast over connection-less wired channels (Column 9, lines 19-30), as well as wireless transceivers associated with nodes.

31. With respect to applicant's arguments on page 19 of the instant remarks. Applicant's contend that "Hagsand does not teach "a maximum number of buffers and size of buffers". The examiner respectfully disagrees and states to applicant's that, no device has an infinite number of buffers or has a buffer on infinite size and as such all devices have a maximum number of buffers and size of buffers.

32. With respect to applicant's arguments on pages 22 and 23 of the instant remarks, in regards to claims 9, 10, 22 and 23. Applicant's contend that "In repeating the rejection, the Examiner did not identify the limitation **"using the source processing element"** in any of the

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cited references". The examiner respectfully disagrees and states to applicant's that Isfeld (Column 34, lines 52-54) discloses "the IOS driver frees up the transmit buffers." Which, when interpreted in the broadest reasonable light reads on applicant's limitation of "freeing the transmit buffer using the **using the source processing element**". Since applicant's did not state whether the source processing element and source node are one in the same and did not state that it is not an intelligent I/O module (IOS) within the node or node network. The examiner has reasonable interpreted it to be a software module (i.e. an intelligent I/O module (IOS)).

33. With respect to applicant's arguments on page 24 of the instant remarks, in regards to claims 12 and 25. Applicant's contend that "the Examiner did not consider the claim 12 limitation that "reading the data from the receive buffer into the destination processing element is based on the pointer.". The examiner respectfully disagrees and refers applicant's to (Column 12, lines 10-48; i.e. discloses ...the beginning of a message, includes a pointer 204 to a source buffer (i.e. destination processing element)). Since applicant's did not state whether the destination processing element and destination node are one in the same or a buffer within the node. The examiner has interpreted it the broadest reasonable light to be a buffer.

34. With respect to applicant's arguments on page 25 of the instant remarks, in regards to claims 13 and 26. Applicant's contend that the examiner did not answer the substance of applicants' arguments. The examiner respectfully disagrees and states to applicants' that, applicants' argument that "the number of commands depends on the number of fragments. The time to transmit a message depends on the number of commands. Thus, a time for a receive call

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in the destination processing element depends on a size of the data.” Is an incorrect assertion, as Isfeld did not disclose where “the time to transmit a message depends on the number of commands”.

35. With respect to applicant’s arguments on page 25 of the instant remarks, in regards to claims 7 and 20. Applicant’s contend that the examiner did not answer the substance of applicants’ arguments. The examiner respectfully disagrees and states to applicants’ that, applicants’ arguments were simply predicated upon claims 7 and 20 being dependent to claims 1 and 14 respectively which applicants’ believed to be allowable. The examiner refers applicants’ to the rejections above for claims 1, 14, 7 and 20 and the response to arguments for claims 1 and 14 which addresses applicants’ arguments.

### ***Conclusion***

36. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,



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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARSHALL MCLEOD whose telephone number is (571)270-3808. The examiner can normally be reached on Monday - Thursday 6:30 a.m-4:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (571) 272-4001. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ramy M Osman/  
Primary Examiner, Art Unit 2457

/Marshall McLeod/  
Examiner, Art Unit 2457  
3/13/2010